Central Valley Regional Water Quality Control Board
7/8 June 2012 Board Meeting

Response to Comments
for the
State of California Department of Parks and Recreation
Empire Mine State Historic Park
Tentative Waste Discharge Requirements and
Tentative Time Schedule Order

The following are Regional Water Quality Control Board, Central Valley Region (Central Valley Water Board) staff responses to comments submitted by interested parties regarding the tentative Waste Discharge Requirements (NPDES Permit Renewal) and Time Schedule Order for the State of California Department of Parks and Recreation, Empire Mine State Historic Park, in Nevada County. Public comments regarding the tentative Orders were required to be submitted to the Central Valley Water Board by 15 March 2012 in order to receive full consideration.

The Central Valley Water Board received timely comments regarding the proposed Orders from the following interested parties:

- California Sport Fishing Protection Alliance (CSPA) and
- San Francisco Baykeeper (Baykeeper)

The submitted comments were accepted into the record, and are summarized below, followed by Central Valley Water Board staff responses.

CSPA COMMENTS

Request for Designated Party Status. CSPA requested designated party status for the Central Valley Water Board hearing scheduled for 7 and 8 June 2012 with regard to the proposed renewal of the NPDES Permit for the State of California Department of Parks and Recreation, Empire Mine State Historic Park. The commenter will be granted designated party status for the subject hearing.

CSPA COMMENT NO. 1. Data used for Reasonable Potential Analysis (RPA)

CSPA states that the proposed Permit fails to use valid, reliable, and representative effluent data in conducting a reasonable potential analysis and effluent limitations' derivation calculations contrary to USEPA's interpretation of Federal Regulations, 40 CFR 122.44(d), and should not be adopted in accordance with 40 CFR 122.4 (a), (d) and (g) and CWC Section 13377.

CSPA further states that the Regional Board failed to use data collected from the discharge prior to May 2008. Empire Mine is well documented to have limited periods of a discolored discharge with high flows and an accompanying high level of pollutant

concentrations. The Regional Board's intentional exclusion of data discards the worst case conditions representative of the mine drainage. Federal Regulations, 40 CFR 122.44(d), requires that limits must be included in permits where pollutants will cause, have reasonable potential to cause, or contribute to an exceedance of the State's water quality standards. The Regional Board has failed to use valid, reliable and representative data in developing limitations, contrary to the cited Federal Regulation. There is no explanation or rationale presented for excluding valid, representative data.

RESPONSE: The monitoring data used to conduct the reasonable potential analysis (RPA) and to establish effluent limitations in the proposed NPDES Permit, in general, were based on the most recent three years of monitoring data. For some constituents of concern, staff evaluated all data obtained since adoption of Existing Order R5-2006-0058. In this case, Central Valley Water Board staff believes that using the most recent three years of monitoring data is representative of the discharge conditions. Generally, the use of more recent monitoring data is preferred as it is more representative of current discharge conditions and because data quality assurance/quality control (QA/QC) improves with time. On 16 May 2005, the Alameda County Superior Court issued a ruling on the appeal of the NPDES Permit for the City of Woodland directing that only 3 years of data be used in the RPA. Legally, the ruling does not set a precedent applicable to all NPDES permits, but is a Court opinion that may be considered along with other pertinent factors.

A new lab was selected after adoption of Order R5-2006-0058. Lab analyses were conducted at lower detection levels which improves analytical quality. Because of the improved data QA/QC, it is appropriate to use only monitoring results obtained since adoption of Order R5-2006-0058. Staff reviewed the additional analytical monitoring results obtained since adoption of Order R5-2006-0058, years 2006 through 2011. Based on approximately 60 monitoring results, constituent concentrations were not detected above applicable water quality standards, except for aluminum, copper, lead, and zinc. Concentrations detected above applicable water quality standards for aluminum occurred once during the most recent three years of monitoring data (2008 through 2011), and once for lead and zinc in 2006. For copper, two analytical monitoring results indicated concentrations above water quality standards, one during the most recent three years of monitoring data (2008 through 2011) and one in 2006. However, all this data was obtained prior to completed construction of the treatment system, and therefore, is not representative of the mine discharge that will occur during the duration of the proposed NPDES Permit. The Discharger's newly constructed passive treatment system is designed to remove solids, and thus, is expected to further reduce metals (and other constituents) in the mine discharge. Moreover, the trend of discharge data has improved, and is expected to further improve once the system is fully functional. And because of the system's ability to remove solids, there is no reasonable potential for aluminum, copper, lead and zinc. The proposed NPDES Permit requires continued monitoring of constituents to determine effectiveness of the newly constructed treatment system. Should data indicate excursions above applicable

water quality objectives or criteria, the permit may be reopened to include or revise effluent limitations accordingly.

CSPA COMMENT NO. 2. Antibacksliding

CSPA states that the proposed Permit contains Effluent Limitations less stringent than the existing permit contrary to the Antibacksliding requirements of the Clean Water Act and Federal Regulations, 40 CFR 122.44 (l)(1).

CSPA further states that Effluent Limitations for total suspended solids (TSS), settleable solids (SS), aluminum, antimony, arsenic, barium, cadmium, chromium III, cobalt, copper, lead, mercury, nickel, thallium, vanadium, and zinc which were contained in Order R5-2006-0058 have been removed. The Effluent Limitations for color, iron, manganese and turbidity have been greatly relaxed by making the limitations an annual average. The Regional Board does not provide any explanation or defense for removing or relaxing the effluent limitations other than to state that their reasonable potential analysis does not show that effluent limitations are necessary.

RESPONSE: Based on new monitoring data for settleable solids (SS), aluminum, antimony, barium, cadmium, chromium III, cobalt, copper, lead, mercury, nickel, thallium, vanadium, and zinc obtained from April 2008 through May 2011, as discussed in the proposed NPDES Permit, Fact Sheet Section IV. C.3., effluent concentrations of these constituents did not exceed applicable water quality standards (except SS). Therefore, the effluent discharge does not demonstrate a reasonable potential for the effluent from the mine, or the mine's newly constructed treatment system, to cause or contribute to an excursion above applicable water quality standards for these constituents. For arsenic, the proposed NPDES Permit contains water quality based effluent limits. For SS, there are no water quality standards. Staff considered that two SS samples from 34 sampling events, contained concentrations at 1.65 ml/L and 7.48 ml/L, which exceeds the average monthly effluent limitation of 1 ml/L contained in Existing Order R5-2006-0058. But because the new passive treatment system is expected to reduce SS in the effluent, and the existing effluent limitations are not based on a water quality criteria or objective, the proposed conclusion is that there is not a reasonable potential for the effluent to exceed a water quality objective, cause nuisance or adversely affect the beneficial uses of Magenta Drain Channel or South Fork Wolf Creek. Existing Order R5-2006-0058 contained effluent limitations for all these constituents; however, the proposed NPDES Permit does not contain effluent limitations for constituents that do not pose a reasonable potential, based on new information and the implementation of a new treatment facility to address these constituents, consistent with anti-backsliding requirements of 40 CFR 122.44(l)(2)(i)(B)(*1*).

Furthermore, pursuant to CWA section 303(d)(4), backsliding may be allowed for water quality based effluent limits if there is compliance with the federal and state antidegradation policies. In this case, water quality based effluent limits established in Order R5-2006-0058 for settleable solids, aluminum, antimony, barium, cadmium, chromium III, cobalt, copper, lead, mercury, nickel, thallium, vanadium, and zinc

were not retained in the proposed NPDES Permit-which complies with federal antibacksliding requirements because there will be no additional degradation based on a reasonable potential analysis conducted on 34 to 36 sampling events establishing no reasonable potential for these constituents.

Finally, CWA section 402(o)(2)(A) allows for backsliding based on material and substantial alterations or additions to the permitted facility which justify the application of a less stringent effluent limit. Given no reasonable potential for these constituents, backsliding is appropriate because of the material and substantial alterations to the site by construction and implementation of a new treatment system, which justify the application of less stringent effluent limitations.

The TSS limits contained in Existing Order R5-2006-0058 were based on Best Professional Judgment and applied the federal effluent limitation guidelines from 40 CFR Part 440 that applies to *active* mining areas. Empire Mine has not been in operation for many years before the Board's adoption of Order R5-2006-0058 and does not have any active mining areas remaining. Therefore, the proposed NPDES Permit appropriately does not contain TSS effluent limitations in accordance to the federal regulations for active mines. Additionally, new monitoring results from 36 sampling events showed low concentrations of TSS that ranged from <1 mg/L to 168 mg/L with an average of 16 mg/L. Further, the new treatment system is designed to remove total suspended solids. Order R5-2006-0058 contained effluent limitations for TSS. but the proposed NPDES Permit does not retain these effluent limitations. CWA section 402(o)(2)(B)(ii) provides exceptions to anti-backsliding requirements for effluent limits based on BPJ where technical mistakes or mistaken interpretations of law were made. In this case, because the Facility is not an active mining area as defined in 40 CFR Part 440 and has not been an active mining area for many years prior to the adoption of Order R5-2006-0058, the effluent limitations representing BPT and BAT for an active mine are not applicable to this Facility. Therefore, it is appropriate to discontinue effluent limitations for TSS in accordance with CWA sections 402(o)(2)(B)(ii).

The proposed effluent limitations for color, iron, manganese and turbidity are 15 color units, 300 µg/L, 50 µg/L, and 5 NTUs, respectively, which are the same as in Existing Order R5-2006-0058. The effluent limitations for these constituents are based on secondary maximum contaminant levels (MCLs). Secondary MCLs are drinking water standards contained in Title 22 of the California Code of Regulations (CCR). Secondary MCLs do not require the same level of protection as California Toxic Rule (CTR) human health criterion because Secondary MCLs are limits placed on the water supplied to the public by community water systems after treatment. For Secondary MCLs, the Department of Public Health (DPH) determines compliance with these secondary Title 22 standards on an annual average basis, when sampling at least quarterly (22 CCR 64449). Since water that meets these requirements on an annual average basis is suitable for drinking, it is impracticable to calculate average weekly and average monthly effluent limitations to protect the MUN beneficial use of the receiving water. Therefore, the compliance frequency for these

limits has been corrected from the Existing Order R5-2006-0058, modifying the limits' averaging period from weekly and monthly averages to an annual average in the proposed Order. Modifying the compliance frequency of Secondary MCLs does not change or degrade water quality, because Secondary MCLs do not require the same level of protection over an identified period of time, as acute aquatic life (hourly), chronic aquatic life (4-days and monthly), or human health CTR criterion. When examined further, changing the same limit's averaging period from weekly/monthly to annual does not allow additional loading of the constituent, therefore there is no "greatly relaxing" of limits as expressed by the commenter. These regulatory compliance measures implemented by DPH were not known at the time the Central Valley Water Board adopted Existing Order R5-2006-0058. The Central Valley Water Board, in similar orders recently adopted, has determined that a compliance averaging period similar to the averaging periods used by DPH for regulating Secondary MCLs, including these constituents, is appropriate.

CSPA COMMENT NO. 3. Antidegradation

CSPA states that the proposed Permit contains an inadequate antidegradation analysis that does not comply with the requirements of Section 101(a) of the Clean Water Act, Federal Regulations 40 CFR § 131.12, the State Board's Antidegradation Policy (Resolution 68-16) and California Water Code (CWC) Sections 13146 and 13247.

CSPA further states that effluent limitations for TSS, SS, aluminum, antimony, arsenic, barium, cadmium, chromium III, cobalt, copper, lead, mercury, nickel, thallium, vanadium, and zinc that were contained in Order No. R5-2006-0058 have been removed. The Effluent Limitations for color, iron, manganese, and turbidity have been greatly relaxed by making the limitations an annual average. The Antidegradation finding in the proposed Permit does not discuss the removal and relation of effluent limitations compared with Order No. R5-2006-0058.

Response: The antidegradation analysis in the proposed NPDES Permit meets the requirements of the State Water Board Administrative Procedures Update 90-004 and USEPA antidegradation guidelines. Discharges from Empire Mine are the head waters of the Magenta Drain Channel. Previous to Existing Order R5-2006-0058, discharges occurred without permits. State Antidegradation Guidance requires Regional Water Boards to apply the antidegradation policy whenever it takes an action that will lower water quality. Existing Order R5-2006-0058 imposed effluent limitations on the existing discharge for the first time, and therefore an antidegradation analysis was not required at the time of adoption of the existing permit. In November 2011, the Discharger completed construction of a passive treatment system designed to remove arsenic, metals, total suspended solids (TSS), and turbidity. Significant reductions of these constituents and others are projected after the first year of operation; then the wetland vegetation and biogenic processes are projected to reach design capacity and thus full compliance with final effluent limitations by June 2015. Upon full operation of the treatment facility, water quality

will be improved, not degraded, and therefore, an antidegradation analysis is not required since the water quality will not be lowered.

As previously discussed in response to CSPA Comment No. 2, the Effluent Limitations for color, iron, manganese, and turbidity are based on the same criteria (standards), Title 22 Secondary MCLs, as in Order R5-2006-0058. California Department of Public Health (DPH) determines compliance with Title 22 standards on an annual average basis. The averaging periods for the Effluent Limitations were revised in the proposed NPDES Permit for consistency with DPH; changing the averaging period will maintain the same level of water quality, and therefore, an antidegradation analysis is not required since water quality will not be lowered. The proposed NPDES Permit does not allow for an increase in flow or mass of pollutants and contains effluent limitations that are at least as stringent as in previous Order R5-2006-0058. State Water Board and USEPA guidelines do not require an antidegradation analysis where water quality will not be lowered. (Memo to the Regional Board Executive Officers from William Attwater (10/7/87), p.5; APU 90-004, pp. 2-3; *EPA Water Quality Handbook 2d*, § 4.5.) As just described, Central Valley Water Board staff believes that the antidegradation analysis contained in the proposed NPDES Permit is adequate and complies with both the state and federal antidegradation policies.

CSPA COMMENT NO. 4. Total Suspended Solids

CSPA states that there is reasonable potential for total suspended solids (TSS) and the proposed permit fails to contain an Effluent Limitation in accordance with Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.

CSPA further states that Order R5-2006-0058 contained an effluent limitation for TSS of 20 mg/l as a monthly average and 30 mg/l as a daily maximum. Order R5-2006-0058 stated that the effluent limitations for TSS were based on 40 CFR 440.102 which represents the degree of effluent reduction attainable by the application of the best practicable control technology (BPT) for mines. Even if one argues that the mine is inactive the best practicable treatment technology would be applicable under the Antidegradation Policy. The proposed Permit, Table F-2, shows that total suspended solids (TSS) concentrations in the discharge have been measured as high as 5,000 mg/l. The effluent limitation for total suspended solids (TSS) has simply been removed from the permit.

Response: Total Suspended Solids (TSS) is a technology based requirement to determine levels of control. The Fact Sheet of the proposed NPDES Permit appropriately contains a thorough discussion on TSS in section IV.B.2. Applicable Technology-Based Effluent Limitations. The Clean Water Act required USEPA to develop effluent limitations, guidelines and standards (ELGs) representing application of BPT, BAT, BCT, and NSPS. ELGs were established at 40 CFR Part 440, Subpart J for the Copper, Lead, Zinc, Gold, Silver, and Molybdenum Ores

Subcategory of the Ore Mining and Dressing Point Source Category, which is applicable to discharges from mines that produce gold bearing ores from open-pit or underground operations, among others. For the purposes of 40 CFR Part 440, "mine" is defined as an active mining area used in or resulting from the work of extracting metal ore or minerals from their natural deposits by any means or method, and "active mining area" is defined as a place where work or other activity related to the extraction, removal, or recovery of metal ore is being conducted. Empire Mine consists of land and property previously used in and resulting from the work of extracting metal ore or minerals, specifically gold, from their natural deposits by any means or method. But Empire Mine is now an inactive mine and the applicable operations for 40 CFR 440 no longer apply. Therefore, the federal ELGs are not applicable to the current discharge from Empire Mine. Additionally out of 36 sampling events obtained during the last three years, TSS in the effluent ranged from less than (<) 1 mg/L up to 168 mg/L with an average concentration of 16 mg/L. The Empire Mine's newly constructed treatment system's removal efficiency of TSS, and associated constituents, is expected to improve as the wetland canopy develops and increases in density (EOA Manual, section 6.2.1). The proposed NPDES Permit requires quarterly monitoring of TSS to determine the efficiency of the treatment system in removing TSS. The proposed NPDES Permit also allows that the permit be reopened to add or modify effluent limitations should data indicate that the effluent discharge demonstrates reasonable potential to cause or contribute to excursions over water quality objectives or standards, including TSS.

CSPA COMMENT NO. 5. Turbidity

CSPA states that the proposed Permit fails to contain an Effluent Limitation for turbidity that is Protective of the Beneficial Uses of the Receiving Stream and the Proposed Limitation is not established as a Weekly and Monthly Average as prescribed by the Regulations.

CSPA further states that the impacts to the beneficial uses of the receiving stream for aquatic life and domestic uses are not protected by the annual average limitation for turbidity and have not been discussed or addressed in an Antidegradation analysis.

Response: In the proposed NPDES Permit, the turbidity effluent limitation has been modified from a monthly average to an annual average. The turbidity effluent limitation is based on Title 22 Secondary MCLs. Secondary MCL's are drinking water standards contained in Title 22 of the California Code of Regulations. As discussed in response to CSPA Comment No. 3, California Department of Public Health (DPH) determines compliance with these Title 22 standards on an annual average basis. Since water that meets these requirements on an annual average basis is suitable for drinking, it is impracticable to calculate average weekly and average monthly effluent limitations because such limits would be calculated more often than necessary to protect the MUN beneficial use. Therefore, for consistency with DPH, the proposed NPDES Permit contains a turbidity effluent limitation as an

annual average. In addition, the proposed NPDES Permit contains a receiving water limitation for turbidity that applies the Basin Plan Water Quality Objective to Magenta Drain Channel and the downstream receiving stream, South Fork Wolf Creek. This is consistent with other permits issued by the Central Valley Water Board and protective of the beneficial uses of South Fork Wolf Creek and Wolf Creek. Because Empire Mine is the head waters of Magenta Drain Channel, and because the receiving water turbidity limit is relative to ambient water quality, to determine compliance and ensure protection of these receiving waters, monitoring samples are obtained upstream and downstream of the confluence of Magenta Drain Channel and South Fork Wolf Creek.

CSPA COMMENT NO. 6. Aluminum

CSPA states that the proposed Permit fails to contain an effluent limitation for aluminum in accordance with Federal Regulations 40 CFR 122.44, USEPA's interpretation of the regulation, and California Water Code, Section 13377.

CSPA further states that as described in Table F-3 of Order R5-2006-0058, aluminum in the effluent has been measured as high as 36,100 ug/l. More recently, acid-soluble aluminum was detected in an effluent sample collected in October 2006 at a concentration of 2,000 mg// and in an effluent sample collected 5 May 2011 at a concentration of 160 mg/l. CSPA states that based on these monitoring results, effluent limitations should be contained in the proposed NPDES Permit based on USEPA developed National Recommended Ambient Water Quality Criteria for protection of freshwater aquatic life for aluminum to prevent toxicity to freshwater aquatic life. The recommended ambient criteria four-day average (chronic) and one-hour average (acute) criteria for aluminum are 87 mg// and 750 mg//, respectively. The drinking water maximum contaminant level (MCL), which is included as a Basin Plan Water Quality Chemical Constituents Objective, for aluminum is 1,000 as a primary MCL and 200 µg/l as a secondary MCL.

Response: Based on 36 new monitoring samples obtained from April 2008 through April 2011, the maximum effluent concentration of aluminum was 22.3 µg/L, as discussed in the proposed NPDES Permit, Fact Sheet Section IV.C.3. Therefore, aluminum in the discharge does not demonstrate a reasonable potential to cause or contribute to an excursion above applicable water quality standards. As discussed in response to CSPA Comment No. 1, the use of more recent monitoring data is preferred as it is more representative of current discharge conditions and because data quality assurance/quality control (QA/QC) improves with time. Thus, the proposed NPDES Permit appropriately does not contain effluent limitations for aluminum since the discharge does not demonstrate reasonable potential. CSPA further states that on 5 May 2011 aluminum concentrations were detected in the effluent at 160 mg/l. Central Valley Water Board staff reviewed an additional eight effluent monitoring samples for aluminum obtained from May 2011 through December 2011, and found that on 5 May 2011 aluminum concentrations were

detected in the effluent at 160 µg/L (not at 160,000 ug/L as CSPA stated), but that the remaining seven samples did not detect concentrations of aluminum greater than (<) 50 µg/L. Though the one sample detected concentrations at 160 µg/L, 43 samples did not detect aluminum concentrations in the effluent above 50 µg/L, and therefore this data analysis does not provide reasonable demonstration that the effluent discharge will potentially cause or contribute to an excursion above applicable water quality standards. Therefore, the proposed NPDES Permit appropriately does not contain an aluminum effluent limitation. Moreover, the newly constructed treatment system (November 2011) is expected to further reduce aluminum. The proposed NPDES Permit requires quarterly monitoring of aluminum to determine the efficiency of Empire Mine's treatment system.

CSPA COMMENT NO. 7. Hardness

CSPA states that the proposed Permit establishes Effluent Limitations for metals based on the hardness of the effluent as opposed to the ambient instream receiving water hardness and fails to use the mandated equations as required by Federal Regulations, the California Toxics Rule (CTR, 40 CFR 131.38(c)(4)).

CSPA also states that Order R5-2006-0058 used ambient hardness from Wolf Creek of 15 mg/L, but the proposed NPDES permit discarded the low hardness values from Wolf Creek without any technical or legal justification. The proposed Permit is not protective of the aquatic life beneficial use of the receiving stream since the reasonable potential analysis used for hardness dependent metals failed to use the lowest recorded ambient hardness from Wolf Creek of 15 mg/L and the mandated CTR equation.

CSPA further states that the Regional Board failed to use the latest available science to develop new copper criteria based on the Biotic Ligand Model (BLM).

Response: As explained in detail in section IV.C.2.e in the Fact Sheet of the proposed NPDES Permit, the reasonable worst-case ambient hardness was used to calculate the CTR hardness dependent metals criteria, in accordance with the SIP, the CTR, and State Water Board Order No. WQO 2008-0008 (Davis Order). The SIP and the CTR require the use of "receiving water" or "actual ambient" hardness, respectively, to determine effluent limitations for these metals. (SIP, § 1.2; 40 CFR § 131.38(c)(4), Table 4, note 4.) The CTR does not define whether the term "ambient," as applied in the regulations, necessarily requires the consideration of upstream as opposed to downstream hardness conditions. Therefore, the State Water Board concluded that where reliable, representative data are available, the hardness value for calculating criteria can be the downstream receiving water hardness, after mixing with the effluent (Davis Order, p. 11). In the proposed NPDES Permit, the effluent limits for hardness-dependent metals are not based solely on the effluent hardness. They are based on the reasonable worst-case downstream ambient hardness, and consider the effect of the effluent hardness on the receiving water. This is consistent with the SIP, CTR, Davis Order, and EID Court Order, and is entirely appropriate.

In the case of Magenta Drain Channel, the effluent hardness is equivalent to the downstream ambient hardness because Empire Mine is the head waters of Magenta Drain Channel. Only during rain events may some small component of upstream flow occur. However, because Magenta Drain Channel flows into South Fork Wolf Creek, the effluent limitations were based on the reasonable worst-case estimated downstream ambient hardness of the confluence of Magenta Drain Channel and South Fork Wolf Creek. As shown in Tables F-4 and F-5 in the Fact Sheet of the proposed NPDES Permit, the calculated CTR criteria are protective under all discharge and flow conditions assuming worst-case conditions for upstream ambient hardness and metals concentrations.

To establish the reasonable worst-case estimated ambient hardness of South Fork Wolf Creek downstream of the confluence, the proposed NPDES Permit used receiving water monitoring data obtained from May 2008 through April 2011. Thirty six samples obtained upstream of the confluence of Magenta Drain Channel and South Fork Wolf Creek indicated that the hardness ranges from 38 mg/L to 160 mg/L as $CaCO_3$. As discussed in response to CSPA comment No.1, Central Valley Water Board staff believes that using the most recent three years of monitoring data is representative of the water quality conditions, in both receiving water and the effluent discharge. Therefore, the minimum observed hardness value during that period was used to establish the reasonable worst-case estimated downstream ambient hardness of South Fork Wolf Creek, as shown in tables F-4 and F-5 in the Fact Sheet of the proposed NPDES Permit. And as also shown, the calculated CTR criteria are protective under all discharge and flow conditions assuming worst-case conditions for upstream ambient hardness and metals concentrations.

CSPA's comment regarding the use of only hardness, and ignoring other water qualities that affect metal toxicity (e.g., pH, alkalinity, dissolved organic carbon, calcium, sodium, chloride, etc.), to establish the CTR criteria is misplaced. As CSPA commented, USEPA has also released a Clean Water Act section 304 criteria document for copper based on the Biotic Ligand Model (*Aquatic Life Ambient Freshwater Quality Criteria—Copper 2007 Revision*) (BLM). The criteria document is a non-regulatory scientific assessment intended as guidance only. (*Id.,* Foreward, p. iii.) Thus, the BLM cannot be used in developing WQBELs in NPDES permits; an EPA-approved Basin Plan or SIP amendment allowing adjustment of the established criteria must be completed, or USEPA must change the CTR. Therefore, these comments by CSPA are directed at the CTR, not the proposed NPDES Permit, which must comply with the final CTR and SIP. CSPA's contention is with regard to the CTR, not the proposed Order. The Central Valley Water Board is required to implement the CTR and SIP, which for the hardness-dependent metals, means using hardness to establish the CTR criteria.

CSPA COMMENT NO. 8. Antimony and Barium (Incorporates CSPA Written Comments Nos. 8 and 9).

CSPA states that the proposed Permit fails to contain Effluent Limitations for antimony and barium, in accordance with Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.

CSPA further states that the observed maximum effluent concentrations (MECs) for antimony and barium were detected in an effluent sample collected on 9 June 2003. These MECs exceed the applicable drinking water maximum contaminant levels (MCLs), which are included in the Basin Plan Chemical Constituents objectives. There is nothing in the record of anything that has occurred during the life of the permit that would have resulted in a change in the character of the discharge; therefore, the proposed NPDES Permit should contain effluent limitations for these constituents.

Response: Based on new monitoring data obtained from May 2008 through April 2011, 36 effluent samples indicated the MEC for antimony at 0.24 µg/L and the MEC for barium at 67 µg/L, as discussed in the proposed NPDES Permit, Fact Sheet Section IV.C.3. These MECs are below the primary MCLs of 6 µg/L and 1000 µg/L, respectively. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an excursion above the applicable water quality standards. Thus, the proposed NPDES Permit appropriately does not contain effluent limitations for antimony and barium. As discussed in response to CSPA Comment No. 1, Central Valley Water Board staff believes that using the most recent three years of monitoring data is representative of the current discharge and receiving water conditions.

CSPA COMMENT NO. 9. Cadmium, Chromium III, Copper, Lead, Nickel, and Zinc (Incorporates CSPA Written Comments Nos. 10, 11, 13, 14, 15, and 17).

CSPA states that the proposed Permit fails to contain Effluent Limitations for cadmium, chromium III, copper, lead, nickel, and zinc in violation of the California Toxics Rule (CTR), Federal Regulations (40 CFR 122.44), the California Water Code Section 13377, and the State's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).

CSPA further states that the observed MEC's for cadmium, chromium III, copper, lead, nickel, and zinc were detected in a sample collected in June 2003. There is nothing in the record of anything that has occurred during the life of the permit that would have resulted in a change in the character of the discharge. Using the worst-case ambient (lowest receiving water) measured hardness of 15 mg/L (also observed in 2003) to calculate the applicable acute and chronic criteria, the 2003 MEC's for these constituents are greater than the applicable calculated water quality criteria, and therefore the proposed NPDES Permit should contain effluent limitations.

Response: Based on new monitoring data from May 2008 through April 2011, 36 effluent samples detected MECs for cadmium at 0.17 µg/L, chromium III at 0.82 µg/L, copper at 2.6 µg/L, lead at 0.73 µg/L, nickel at 2.7 µg/L, and zinc at 12 µg/L. As discussed in the response to CSPA Comment No. 7, the reasonable worst-case ambient hardness was used to calculate the CTR hardness dependent metals criteria. The resulting calculated chronic criteria (most stringent criteria) applicable to cadmium was 2.4 µg/L, chromium III was 198 µg/L, copper was 8.9 µg/L, lead was 2.7 µg/L, nickel was 50 µg/L, and zinc was 24 µg/L. Thus, the effluent discharge does not demonstrate reasonable potential to cause or contribute to an excursion above applicable water quality standards for these hardness-dependent metals. Therefore, the proposed NPDES Permit appropriately does not contain effluent limitations for these metals. As discussed in response to CSPA Comment No. 1, Central Valley Water Board staff believes that using the most recent three years of monitoring data is representative of the discharge and receiving water conditions.

CSPA COMMENT NO. 10. Cobalt and Vanadium (Incorporates CSPA Written Comments Nos. 12 and 16).

CSPA states that the proposed Permit fails to contain Effluent Limitations for cobalt and vanadium, in accordance with Federal Regulations 40 CFR 122.44 and California Water Code, Section 13377.

CSPA further states that the observed maximum effluent concentrations (MECs) for cobalt and vanadium were detected in an effluent sample collected on 9 June 2003. These MECs exceed the applicable agricultural water quality goal, which are included in the Basin Plan Chemical Constituents objectives. There is nothing in the record of anything that has occurred during the life of the permit that would have resulted in a change in the character of the discharge; therefore, the proposed NPDES Permit should contain effluent limitations for these constituents.

Response: Based on new monitoring data obtained from May 2008 through April 2011, 36 effluent samples indicated the MEC for cobalt at 2.6 µg/L and the MEC for vanadium at 5.6 µg/L, as discussed in the proposed NPDES Permit, Fact Sheet Section IV.C.3. These MECs are below the agricultural water quality goal of 50 µg/L and 100 µg/L, respectively. Therefore, the discharge does not demonstrate a reasonable potential to cause or contribute to an excursion above the applicable water quality standards. Thus, the proposed NPDES Permit appropriately does not contain effluent limitations for cobalt or vanadium. As discussed in response to CSPA Comment No. 1, Central Valley Water Board staff believes that using the most recent three years of monitoring data is representative of the discharge conditions.

CSPA COMMENT NO. 11. Flow and Mass Limitations (Corresponds to CSPA written comment No. 18)

CSPA states that the proposed Permit fails to include mass limitations for pollutants as required by 40 CFR 122.46(f) and fails to include any limiting parameters based on the design of the wastewater treatment process.

CSPA further states that the proposed Permit fails to include a flow limitation. The proposed Permit cannot control the amount of pollutants discharged without mass or flow limitations. An antidegradation analysis is based on the amount of pollutants discharged to surface waters; without knowledge of either the mass or the flow of pollutants discharged an Antidegradation analysis could not have been conducted.

Response: 40 CFR 122.25(f)(1)(ii) states that mass limitations are not required when applicable standards are expressed in terms of other units of measurement (e.g. concentration). Mass limitations are not included for constituents that have concentration based limits. Including additional mass limitations for these constituents, which would simply be calculated based on the concentration-based WQBEL and the treatment system's design flow, are not necessary for protection of the beneficial uses of the receiving water.

A flow limitation is a technology-based limit. The intent of technology-based effluent limits is to require a minimum level of treatment of pollutants based on available treatment technologies, while allowing the discharger to use any available control technique to meet the limits. For industrial facilities, which includes Empire Mine, technology-based effluent limits are derived by using 1) national effluent limitations guidelines and standards (ELGs) established by EPA, and/or 2) Best professional judgment on a case-by-case basis in the absence of ELGs. As discussed in response to CSPA Comment No. 2, the federal ELGs from 40 CFR Part 440 applies to active mining areas, and since Empire Mine is not an active mine, they do not apply. Therefore, best professional judgment should and was used to determine whether the proposed NPDES Permit contained a flow limit.

As discussed in section II in the Fact Sheet of the proposed NPDES Permit, the discharge from Empire Mine is continuous; however the rate of flow is lower in the summer and fall than in winter and spring. The average annual flow rate from Magenta Drain Tunnel is 230 gallons per minute (gpm). The Discharger constructed a new passive treatment system that consists of a water collection structure and pump station, conveyance piping, settling pond, and two aerobic free-water surface wetlands. Mine drainage from the Magenta Drain portal is captured in a pipe and conveyed by gravity flow to a pump vault, then pumped through an above ground pipeline to the settling pond. The mine drainage enters the settling pond and flows by gravity through two aerobic wetlands, operated in series. Treated water from the second wetland gravity flows back into the Magenta Drain Channel. The design flow of this treatment system is 2.3 million gallons per day, or 1,600 gpm.

The settling pond and two wetlands are completely lined with plastic geomembrane liners. The bottom of the settling pond will be sounded annually, and precipitated solids will be periodically removed and disposed of off-site. The ponds were sized assuming space for approximately 500 cubic yards of precipitate material with an assumed density of about 8 pounds per gallon per cubic foot (i.e., 5% solids). Based on the average design flow rate and iron concentration of the mine drainage, it's estimated that precipitated solids will need to be removed from the settling pond every four to ten years and from the wetlands every twenty to fifty years. The proposed NPDES Permit provisionally requires the Discharger to develop and submit a Settling Pond and Wetlands Operation and Management Plan to the Central Valley Water Board. Technology-based flow limits are not necessary to protect water quality or for the protection of the beneficial uses of the receiving water, and therefore, the proposed NPDES Permit appropriately does not contain a flow technology-based limit.

CSPA COMMENT NO. 12. Additive Toxicity (Corresponds to CSPA Written Comment No.19)

CSPA states that the proposed Permit fails to include the requirements of the Basin Plan, *Implementation, Policy for Application of Water Quality Objectives* regarding additive Toxicity. CSPA further states that the cited metals have a potential for exhibiting additive toxic effects, and that the proposed Permit fails to include any assessment of additive toxicity as is required by the Basin Plan.

Response: The Central Valley Water Board staff acknowledges the potential impact to aquatic life and human health as a result of additive toxicity. This impact would particularly be expected when discharges of the pollutants of concern (e.g., all carcinogens) are discharged at the same time and at levels that exceed applicable water quality objectives during critical low flow times. An accurate evaluation of additivity would therefore require extensive data collection and analysis. Alternatively, the Central Valley Water Board uses several mechanisms within an Order to protect against toxic and carcinogenic effects. For this Discharger, the proposed NPDES Permit contains water quality-based effluent limitations using conservative assumptions (e.g., use of critical low flows) designed to be protective of receiving water quality (based on applicable water quality objectives established to protect against acute and chronic toxicity and human health carcinogenicity). The proposed NPDES Permit also contains receiving water limitations prohibiting toxic substances to be present, individually or in combination, in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life.

In addition, the proposed NPDES Permit contains acute whole effluent toxicity limits that establish additional thresholds to control acute toxicity in the effluent: survival in one test no less than 70% and a median of no less than 90% survival in three consecutive tests. Some in-test mortality can occur by chance, and thus to

account for this, in the USEPA acute toxicity test method, the test acceptability criteria allow ten percent mortality (requires 90% survival) in the control. Therefore, the acute toxicity limits allow for some test variability, but impose ceilings for exceptional events (i.e., 30% mortality or more), and for repeat events (i.e., median of three events exceeding mortality of 10%).

Further, the proposed NPDES Permit requires whole effluent toxicity (WET) testing for both acute and chronic toxicity designed specifically to determine whether the combination of pollutants contained in a discharge result in toxic effects. But, without the toxicity control provisions in the SIP, the State Water Board concluded that it is infeasible to develop numeric effluent limitations for chronic toxicity. (WQO 2003-0012, pp. 9-10) Therefore, the proposed NPDES Permit includes a narrative chronic toxicity limit and numeric toxicity monitoring triggers. If the discharge exceeds the toxicity numeric monitoring trigger established in the proposed NPDES Permit, the Discharger is required to initiate a Toxicity Reduction Evaluation (TRE), in accordance with an approved TRE Work Plan, and take actions to mitigate the impact of the discharge and prevent reoccurrence of toxicity. The proposed NPDES Permit also contains a Reopener Provision that allows it to be reopened to include a numeric chronic toxicity limitation, a new acute toxicity limitation, and/or a limitation for a specific toxicant identified in the TRE.

CSPA COMMENT NO. 13. Statistical Multipliers (Corresponds to CSPA Written Comment No. 20)

CSPA states that the proposed permit contains an inadequate reasonable potential analysis by using incorrect statistical multipliers as required by Federal regulations, 40 CFR § 122.44(d)(1)(ii).

CSPA further states that a statistical analysis results in a projected maximum effluent concentration (MEC) based on laboratory variability and the resulting MEC is greater than was obtained from the actual sampling data. The result of using statistical variability is that a greater number of constituents will have a reasonable potential to exceed water quality standards and therefore a permit will have a greater number of effluent limitations. The intentional act of ignoring the Federal regulation has a clear intent of limiting the number of regulated constituents in an NPDES permit. The fact that the SIP illegally ignores this fundamental requirement does not exempt the Regional Board from its obligation to consider statistical variability in compliance with federal regulations, especially for non-SIP regulated pollutants.

Response: Regional Water Board staff performed a reasonable potential analysis (RPA) to determine the proposed effluent limitations in accordance with the procedures specified in the SIP, by comparing the maximum effluent concentration of a pollutant to the applicable water quality criteria/objective. CSPA is commenting on the validity of the SIP to determine reasonable potential to cause or contribute to an exceedance of a water quality standard. The comment is specifically focused on

the use of variable multiplier factors that represent the statistical variation and standard deviation of data used for the analysis outlined in the USEPA *Technical Support Document for Water Quality Based Toxics Control* (TSD), compared to the use of the default multiplier of "1" in the SIP. In developing the SIP, the State Board addressed variability in the reasonable potential analysis by determining that the maximum effluent concentration shall be representative of the effluent for acute, chronic and human health criteria. Using the procedures specified in the SIP and its default multiplier, instead of using the variable multiplier factors outlined in the TSD, will not result in lowering the water quality of the receiving water.

Currently there is no State or Regional Water Board Policy that establishes a recommended or required approach to conduct an RPA or establish water quality based effluent limitations for non-CTR/NTR constituents. However, the State Water Board has held that the Regional Water Board may use the SIP as guidance for water quality-based toxics control for non-CTR constituents. The SIP states in the introduction "*The goal of this Policy is to establish a standardized approach for permitting discharges of toxic pollutants to non-ocean surface waters in a manner that promotes statewide consistency*." Therefore, for consistency in the development of NPDES permits, Central Valley Water Board staff use the RPA procedures from the SIP for the federal California Toxic Rule or National Toxic Rule (CTR/NTR) constituents and the non-CTR/NTR constituents.

CSPA COMMENT NO. 14. Settleable Solids (Corresponds to CSPA Written Comment No. 21)

CSPA states that the proposed Permit fails to contain an Effluent Limitation for Settleable Solids (SS) in violation of Federal Regulations (40 CFR 122.44) and the California Water Code (CWC), Section 13377.

CSPA further states that the Basin Plan states that "[w]ater shall not contain substances in concentrations that result in the deposition of material that causes nuisance or adversely affects beneficial uses." Order No. R5-2006-0096 established an average monthly effluent limitation (AMEL) of 0.1 ml/L and a maximum daily effluent limitation (MDEL) of 0.2 ml/L for settleable solids to implement the Basin Plan's narrative objective. Settleable solids were detected in four samples at concentrations ranging from 0.115 ml/L to 7.48 ml/L based on 34 samples.

Response: Four settleable solids samples out of the 34 monitoring samples obtained from April 2008 through April 2011 resulted in detection of settleable solid concentrations at 0.115 ml/L, 0.689 ml/L, 1.65 ml/L, and 7.48 ml/L. The new passive treatment system is expected to further reduce the potential for settleable solids to be discharged. Based on these limited detections and the improved treatment system, there is not a reasonable potential for the effluent to cause or contribute to an excursion above applicable water quality standards for settleable solids, or to cause nuisance or adversely affect beneficial uses. Additionally, the SS limitation

traditionally placed on wastewater treatment plant discharges is associated with the operational performance of secondary clarifies, and the ability the solids have to settle in the clarifiers. This control is not applicable to the treatment facility for the Empire Mine discharge. Therefore, the proposed NPDES Permit appropriately does not contain effluent limitations for settleable solids.

CSPA COMMENT NO. 15. Thallium (Corresponds to CSPA Written Comment No. 22)

CSPA states that the proposed Permit fails to contain an Effluent Limitation for thallium in violation of the California Toxics Rule, Federal Regulations (40 CFR 122.44), the California Water Code (CWC), Section 13377 and the State's Policy for Implementation of Toxics Standards for Inland Surface Waters, Enclosed Bays, and Estuaries of California (SIP).

CSPA further states that thallium was detected in the mine drainage discharge on 7 January 2009 with a J-flagged value of 0.22 mg/l. OEHHA's recommended public health goal in drinking water is 0.1 ug/l. The observed maximum effluent concentration (MEC) is greater than the water quality criteria.

Response: The California Toxic Rule (CTR) includes a thallium criterion of 1.7 µg/L for the protection of human health for waters from which both water and organisms are consumed. Based on 36 samples collected between May 2008 and April 2011, the MEC for thallium was 0.33 µg/L. Therefore, thallium in the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above the CTR human health criterion; thus, the proposed NPDES Permit appropriately does not contain effluent limitations for thallium.

As required by the California Safe Drinking Water Act of 1996, California Environmental Protection Agency Office of Environmental Health Hazard Assessment (OEHHA) adopted public heal goals (PHGs) for contaminants in drinking water based exclusively on public health considerations. The PHGs represent levels of contaminants in drinking water that would pose no significant health risk to individuals consuming the water on a daily basis over a lifetime. For carcinogens, PHGs are based on a 10^6 incremental (one-in-a-million) cancer risk estimates. OEHHA and the California Department of Public Health (DPH) consider the one-in-a-million risk level to represent a *de minimis* level of cancer risk for involuntary exposure to contaminants in drinking water. PHGs adopted by OEHHA are for use by DPH in establishing primary drinking water MCLs. DPH's primary MCL for thallium is 2 µg/L, which was based on OEHHA's PHG for thallium of 0.1 µg/L. As previously stated, the MEC for thallium was 0.33 µg/L; therefore, the discharge does not demonstrate reasonable potential to cause or contribute to an in-stream excursion above DPH's primarily MCL of 0.1 µg/L, and thus, the proposed NPDES Permit appropriately does not contain effluent limitations for thallium.

CSPA COMMENT NO. 16. Dissolved Oxygen (Corresponds to CSPA Written Comment No. 23)

CSPA states that the proposed Time Schedule Order fails to acknowledge that the Discharger threatens to violate the Receiving Water Limitation for dissolved oxygen which is based on a Basin Plan Water Quality Objective and compliance is not required in "the shortest practicable time".

CSPA further states that both EPA's and the Basin Plan criteria for dissolved oxygen are instantaneous maximums. The cold water aquatic life beneficial use will be degraded by any allowance for a compliance time schedule. Any allowance for a compliance time schedule is unwarranted since reaeration can be effectively accomplished in a significantly shorter period of time.

Response: Central Valley Water Board staff concurs. There are methods available for the Discharger to entrain oxygen into the treated mine drainage prior to discharge into the receiving waters. Therefore, the time schedule for dissolved oxygen has been removed from the proposed Time Schedule Order.

SAN FRANCISCO BAYKEEPER COMMENTS

BAYKEEPER COMMENT NO. 1. Lawsuit

Baykeeper comments that the Department of Parks and Recreation ("Parks") first submitted an application for a permit for its discharge from Magenta Drain as a result of a lawsuit filed by Baykeeper. Under the settlement entered to resolve that lawsuit, Baykeeper has been and continues to monitor Parks' compliance with its current NPDES permit for the Magenta Drain discharge.

Response: Central Valley Water Board staff has noted the comment.

BAYKEEPER COMMENT NO. 2. CSPA's Comments

Baykeeper comments that the Central Valley Water Board cannot legally adopt the proposed permit as drafted. The proposed permit fails to incorporate effluent limitations and other requirements required by the Clean Water Act and its implementing regulations. Baykeeper requests that the Central Valley Water Board incorporate by reference, the specific comments on the proposed permit submitted by the California Sportfishing Protection Alliance ("CSPA"). CSPA's comments provide a detailed legal, scientific and technical analysis of the failures of the proposed permit to meet federal and state requirements on a pollutant by pollutant basis. The Regional Board must revise the proposed permit to address each of the issues raised in CSPA's letter.

Response: Central Valley Water Board staff has noted the comment.

BAYKEEPER COMMENT NO. 3. Backsliding, RPA, and Antidegradation (Corresponds to Baykeeper Written Comment No. (1))

Baykeeper states that the proposed permit is illegal as it backslides on effluent limitations (including by eliminating some effluent limitations entirely) without legal or technical justification and that the Central Valley Water Board failed to conduct a reasonable potential analyses or an antidegradation analysis that meets applicable state and federal requirements.

Baykeeper further states that the Magenta Drain discharge is variable, and the levels of pollutants in the discharge fluctuate dramatically. The nature of the discharge from the Magenta Drain has not changed since adoption of the current Permit in 2006, and it still contains dozens of pollutants at varying levels. Sampling data collected over the last six years pursuant to the 2006 Permit demonstrates discharges from the Magenta Drain often exceed effluent limitations that the Central Valley Water Board previously determined are necessary to protect water quality. The Central Valley Water Board's reasonable potential analyses, its antidegradation analysis, and its recalculation of effluent limitations for the Proposed Permit are arbitrary, capricious, and illegal under the Clean Water Act and the Porter-Cologne Water Quality Control Act.

Response: See responses to CSPA Comments Nos. 1 through 3.

BAYKEEPER COMMENT NO. 4. Antidegradation Analysis (Corresponds to Baykeeper Written Comment No. (2))

Baykeeper states the Central Valley Water Board cannot substitute its conclusory claim that water quality will not be degraded for the required antidegradation analysis. The Central Valley Water Board has a legally mandated duty to protect the public's right to clean and safe water.

Baykeeper further states that rather than engage in the robust antidegration analysis required by the law, the Regional Board states, "[t]his Order does not allow for an increase in flow or mass of pollutants to the receiving water. Therefore, a complete antidegradation analysis is not necessary." There is no legal basis for this conclusion. The defects in the Regional Board's reasonable potential analyses and antibacksliding conclusions mean that there is no guarantee that the discharges will not cause unacceptable degradation of the downstream receiving waters – in violation of State and Federal antidegradation requirements.

Response: See response to CSPA comment Nos. 2 and 3.